AMENDMENTS TO THE CLAIMS

1. (Currently amended) A process of forming a solder alloy precursor on a microelectronic workpiece that includes a patterned mask over a conductive under bump metallurgy including a first barrier layer and a seed layer, the patterned mask exposing portions of the conductive under bump metallurgy, the process comprising:

forming a ~~diffusion~~ second barrier layer on the exposed portions of the conductive under bump metallurgy, wherein the second barrier layer is a diffusion barrier layer;

forming a lead-free first conductive layer over the ~~diffusion~~ second barrier layer, the ~~diffusion~~ second barrier layer located between the first conductive layer and the under bump metallurgy; and

forming a lead-free second conductive layer over the first conductive layer, the first conductive layer located between the second conductive layer and the ~~diffusion~~ second barrier layer, wherein the second conductive layer has a different composition than the first conductive layer ~~and wherein the first conductive layer does not include material from one of the second conductive layer and the diffusion barrier layer~~.

2. (Currently amended) The process of Claim 1 wherein the ~~diffusion~~ second barrier layer comprises copper or nickel.

3. (Previously presented) The process of Claim 1, wherein the first conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

4. (Original) The process of Claim 3, wherein the first conductive layer comprises tin or silver.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

5. (Previously presented) The process of Claim 1, wherein the second conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

6. (Original) The process of Claim 5, wherein the second conductive layer comprises tin or silver.

7. (Currently amended) The method of Claim 1 further comprising forming at least one additional conductive layer over the ~~diffusion~~ second barrier layer.

8. (Previously presented) The method of Claim 7, wherein the at least one additional conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

9. (Currently amended) The method of Claim 1, wherein the ~~diffusion~~ second barrier layer is formed by electrolytic deposition.

10. (Original) The method of Claim 1, wherein either the first or the second conductive layer is free of tin and silver.

11. (Currently amended) A process of forming a solder alloy precursor on a microelectronic workpiece having a conductive under bump metallurgy including at least a first barrier layer and a seed layer, the process comprising:

forming one of a patterned mask and a ~~diffusion~~ second barrier layer over [[a]] the conductive under bump metallurgy, wherein the second barrier layer is a diffusion barrier layer;

forming the other of the patterned mask and the ~~diffusion~~ second barrier layer, wherein the pattered mask is formed on one of the conductive under bump metallurgy and the ~~diffusion~~

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

second barrier layer and wherein the ~~diffusion~~ second barrier layer is formed on at least the exposed portions of the conductive under bump metallurgy;

forming a lead-free first conductive layer on a surface of the ~~diffusion~~ second barrier layer; and

forming a lead-free second conductive layer over the first conductive layer, the first conductive layer located between the second conductive layer and the surface of the microelectronic workpiece, wherein the second conductive layer has a different composition than the first conductive layer.

12. (Previously presented) The method of Claim 11, wherein the first and second conductive layers are selected from the group consisting of tin, silver, copper, gold, and bismuth.

13. (Previously presented) The method of Claim 11, wherein the first and second conductive layers are selected from the group consisting of tin, silver, and copper.

14. (Previously presented) The process of Claim 11, further comprising the step of forming at least one additional conductive layer, wherein the at least one additional conductive layer has a different composition than the second conductive layer.

15. (Previously presented) The process of Claim 14, wherein the at least one additional conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

16. (Currently amended) A process of forming a solder alloy precursor on a microelectronic workpiece having a conductive under bump metallurgy including at least a first barrier layer and a seed layer, the process comprising:

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

forming one of a patterned mask and a ~~diffusion~~ second barrier layer over a conductive under bump metallurgy, wherein the second barrier layer is a diffusion barrier layer;

forming the other of the patterned mask and the ~~diffusion~~ second barrier layer, wherein the pattered mask is formed on one of the conductive under bump metallurgy and the ~~diffusion~~ second barrier layer and wherein the ~~diffusion~~ second barrier layer is formed on the exposed portions of the conductive under bump metallurgy;

forming a lead-free first conductive layer on a surface of the ~~diffusion~~ second barrier layer; and

forming a lead-free second conductive layer over the first conductive layer, the first conductive layer located between the second conductive layer and the surface of the microelectronic workpiece, wherein the second conductive layer has a different composition than the first conductive layer, at least one of the first and second conductive layers comprising an alloy of at least two conductive materials.

17. (Previously presented) The process of Claim 16, wherein the first and second conductive layers are selected from the group consisting of tin, silver, copper, gold, and bismuth.

18. (Previously presented) The method of Claim 16, wherein the at least two conductive materials are selected from the group consisting of tin, silver, copper, gold, and bismuth.

19. (Original) The method of Claim 16, further comprising forming at least one additional conductive layer over the surface of the microelectronic workpiece.

20. (Previously presented) The method of Claim 19, wherein the additional conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

21. (Currently amended) A process of forming a solder alloy precursor on a microelectronic workpiece having a conductive under bump metallurgy including at least a first barrier layer and a seed layer, the process comprising:

forming one of a patterned mask and a ~~diffusion~~ second barrier layer over a conductive under bump metallurgy, wherein the second barrier layer is a diffusion barrier layer;

forming the other of the patterned mask and the ~~diffusion~~ second barrier layer, wherein the pattered mask is formed on one of the conductive under bump metallurgy and the ~~diffusion~~ second barrier layer and wherein the ~~diffusion~~ second barrier layer is formed on the exposed portions of the conductive under bump metallurgy;

forming a lead-free first conductive layer on a surface of the ~~diffusion~~ second barrier layer; and

forming a lead-free second conductive layer over the first conductive layer, the first conductive layer located between the second conductive layer and the surface of the microelectronic workpiece, wherein the second conductive layer has a different composition than the first conductive layer, wherein the second conductive layer is formed by substitutional reduction.

22. (Previously presented) The method of Claim 21, wherein the first and second conductive layers are selected from the group consisting of tin, silver, copper, gold, and bismuth.

23. (Original) The method of Claim 21, wherein the first and second conductive layers comprise tin or silver.

24. (Original) The method of Claim 21 further comprising the step of forming at least one additional conductive layer over the microelectronic workpiece.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

25. (Previously presented) The process of Claim 24, wherein the at least one additional conductive layer is selected from the group consisting of tin, silver, copper, gold, and bismuth.

26. (Previously presented) The method of Claim 21, wherein the second layer is selected from the group consisting of silver, copper, gold, and bismuth.

27-41. (Canceled)

42. (New) The process of Claim 1, wherein the first conductive layer does not include material from one of the second conductive layer and the diffusion barrier layer.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100